

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Preliminary Draft Staff Report

Proposed Amended Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines

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EXECUTIVE SUMMARY

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BACKGROUND

Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines was adopted by the Governing Board on April 2, 2004. The primary objective of Rule 1470 is to reduce emissions of diesel particulate matter (diesel PM) from stationary diesel-fueled internal combustion engines. The rule implements the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (Stationary Diesel Engine ATCM or ATCM) that was adopted by the California Air Resources Board (CARB), becoming effective in California in December 2004. Rule 1470 is equivalent to or more stringent than the ATCM.

In October 2010, CARB amended the stationary diesel engine ATCM to revise emission limits for new stationary emergency standby engines and new stationary emergency standby direct-drive fire pumps to closely align California's requirements with EPA's federal "Standards of Performance for Stationary Compression-Ignition Internal Combustion Engines" referred to as "NSPS." Two primary amendments to the ATCM was eliminating requirements that new emergency standby engines and direct drive fire pumps must meet after-treatment based Tier 4 emission standards for NO_x and particulate matter. The amended ATCM requires that new emergency standby engines meet a 0.15 grams per brake horsepower-hour (g/bhp-hr) particulate emissions limit and NO_x emission limit that would not require after-treatment. The amended ATCM requires that new direct drive fire pumps meet emission standards similar to the federal NSPS with delays in implementation up to three years for most engines.

Proposed Rule 1470 will eliminate requirements for new stationary emergency standby engines and direct drive fire pumps to meet after-treatment based Tier 4 emission standards for NO_x. The AQMD staff agrees with CARB's assessment that after-treatment technologies for NO_x, specifically selective catalytic reduction, are not suited for emergency standby engines because their normal testing session of 15 to 30 minutes does not allow sufficient time for the catalyst to reach temperatures to properly operate. In addition, Tier 4 particulate emission standards for direct drive fire pumps would also not be required and new direct drive fire pumps will be required to meet a 0.15 g/bhp-hr particulate emission rate.

Proposed Amended Rule 1470 will retain Tier 4 particulate emission standards for new stationary emergency standby engines, but narrow the applicability of this emission standard. CARB's Regulatory Advisory acknowledges that at the local level, air quality management districts may need to further address diesel stationary engines to ensure that emissions and risk are adequately addressed. The AQMD staff is concerned about the health risk from new engines, particularly those located at or near sensitive receptors. Rule 1470 currently includes specific provisions for those engines located at or near a school. Similar to the provision for schools, Proposed Amended Rule 1470 narrows the applicability for implementation of Tier 4 PM emission limits by requiring engines located at or near a sensitive receptor (with the exception of schools which has its own provisions) to meet Tier 4 PM emission limit in the state Off-Road Compression Ignition Engine Standards which would require after-treatment. All other engines will be required to comply with the health risk levels of Rule 1401 (1 in a million without t-BACT and 10 in a million with t-BACT) and an particulate emission rate limit of 0.15 g/bhp-hr.

PROPOSED AMENDMENTS TO RULE 1470

Proposed amendments to Rule 1470 primarily affect new emergency standby diesel engines and direct drive fire pumps. Proposed Amended Rule 1470 would revise the limits for NO_x and HC emissions for new standby engines to eliminate the current requirement to install after-treatment controls for NO_x and HC. Proposed amendments would delay PM emission rates for emergency standby engines to January 1, 2012 and narrow the applicability of the current PM standards to those engines that are located within 100 meters of a sensitive receptor or residence. For those engines with residences or sensitive receptors located beyond 100 meters, owners/operators would be required to demonstrate compliance with the risk levels in Rule 1401(d)(1)(A) or (d)(1)(B) and meet PM emission rates of 0.15 grams per brake horsepower.

Proposed amendments to Rule 1470 include changes to several definitions and three new definitions for Certified CI Engine, Date of Initial Installation and Sensitive Receptor.

Other proposed amendments include:

- Changes to fuel and alternative fuel requirements
- Revisions to requirements for new stationary emergency standby engines, excluding direct-drive fire pumps
 - Consolidating all hours of operations requirements
 - Delaying Tier 4 diesel PM emission requirement for new emergency standby engines installed between 2011 and 2012
 - Relaxing diesel PM standards for engines that are located more than 100 meters from a school or other sensitive receptor that can demonstrate compliance with cancer risk requirements of Rule 1401
 - Ensure if a diesel particulate filter is used, that is CARB Verified
 - Relieving the need to add exhaust aftertreatment for NO_x
- Revisions to emission requirements for new stationary emergency direct-drive fire pumps so that exhaust aftertreatment for PM and NO_x would not be required
- Removing HC, NO_x, and CO emission requirements for new and in-use stationary prime engines and replacing them with a reference to SCAQMD Rule 1110.2 which are more stringent than current Rule 1470 and state standards
- Replacing all agricultural engine requirements with direct references to the ATCM
- Replacing all requirements for stationary diesel engines less than or equal to 50 bhp with direct references to the ATCM
- Streamlining recordkeeping and reporting requirements for emergency standby engines to more closely coincide with refueling practices
- Streamlining reporting requirements for engines with Interruptible Service Contracts
- Limited provision for alternative compliance options from all engines to stationary prime (non-emergency) engines
- Deleting an outdated exemption and exemptions pertaining to agricultural engines
- Adding an exemption from emission standards for diesel engines used at research and development and educational facilities

Other proposed amendments include:

- Changes to fuel and alternative fuel requirements
- Revisions to requirements for new stationary emergency standby engines, excluding direct-drive fire pumps
 - Consolidating all hours of operations requirements
 - Adding diesel PM emission requirements for engine installed in 2011
 - Relaxing diesel PM standards for engines that are located more than 100 meters from a school or other sensitive receptor that can demonstrate compliance with cancer risk requirements of Rule 1401
 - Adding requirements for diesel particulate filters used to comply with PM requirements
 - Relieving the need to add exhaust after treatment for NOx
- Changes to emission requirements for new stationary emergency direct-drive fire pumps so that exhaust after treatment for PM and NOx would not be required
- Removing HC, NOx, and CO emission requirements for new and in-use stationary prime engines and replacing them with a reference to SCAQMD Rule 1110.2 which are more stringent than current Rule 1470 and state standards
- Replacing all agricultural engine requirements with direct references to the ATCM
- Replacing all requirements for stationary diesel engines less than or equal to 50 bhp with direct references to the ATCM
- Streamlining recordkeeping and reporting requirements for emergency standby engines to more closely coincide with refueling practices
- Streamlining reporting requirements for engines with Interruptible Service Contracts
- Adding alternative compliance options for stationary prime (non-emergency) engines
- Deleting an outdated exemption and exemptions pertaining to agricultural engines
- Adding an exemption from emission standards for diesel engines used at research and development and educational facilities

AFFECTED SOURCES

Proposed Amended Rule 1470 will primarily affect new emergency standby engines and direct drive fire pumps. Based on the AQMD's permitted data base there are approximately 500 new permits for emergency standby engines and 40 new permits for direct drive fire pumps annually. These engines are located at a wide variety of facilities including but limited to schools, hospitals, telecommunications, government facilities, commercial and industrial facilities.

IMPACT ASSESSMENT FOR PROPOSED AMENDED RULE 1470

Proposed Amended Rule 1470 is expected to result in foregone NOx and PM emission reductions from new stationary emergency standby generator engines and new stationary emergency standby direct-drive fire pump engines. A summary of foregone NOx and PM emission reductions is discussed in Chapter 3.

CHAPTER 1: BACKGROUND

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STRATEGIES**

INTRODUCTION

Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines was adopted by the Governing Board on April 2, 2004. The primary objective of Rule 1470 is to reduce exposure to emissions of diesel particulate matter (diesel PM) from stationary diesel-fueled internal combustion engines. The rule implements the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (Stationary Diesel Engine ATCM or ATCM) that was adopted by the California Air Resources Board (CARB), becoming effective in California in December 2004. Rule 1470 must be as or more stringent than CARB's ATCM.

In October 2010, CARB amended the stationary diesel engine ATCM to revise emission limits for new stationary emergency standby engines and new stationary emergency standby direct-drive fire pumps to closely align California's requirements with EPA's federal "Standards of Performance for Stationary Compression-Ignition Internal Combustion Engines" referred to as "NSPS." Two primary amendments to the ATCM eliminated requirements that new emergency standby engines and direct drive fire pumps must meet after-treatment based Tier 4 emission standards for NO_x and particulate matter. The amended ATCM requires that new emergency standby engines meet a 0.15 grams per brake horsepower-hour (g/bhp-hr) particulate emissions limit, and 2007 model year or new emission limits in the Off-Road Standards for all pollutants. The amended ATCM requires that new direct drive fire pumps meet emission standards similar to the federal NSPS with delays in implementation up to three years for most engines.

Proposed Rule 1470 will eliminate requirements for new stationary emergency standby engines and direct drive fire pumps to meet after-treatment based Tier 4 emission standards for NO_x. The AQMD staff agrees with CARB's assessment that after-treatment technologies for NO_x, specifically selective catalytic reduction, are not suited for emergency standby engines because their normal testing session of 15 to 30 minutes does not allow sufficient time for the catalyst to reach temperatures to properly operate. In addition, Tier 4 particulate emission standards for direct drive fire pumps would also not be required and new direct drive fire pumps will be required to meet a 0.15 g/bhp-hr particulate emission rate.

Proposed Amended Rule 1470 will retain Tier 4 particulate emission standards for new stationary emergency standby engines. CARB's Regulatory Advisory acknowledges that at the local level, air quality management districts may need to further address diesel stationary engines to ensure that emissions and risk are adequately addressed. The AQMD staff is concerned about the health risk from new engines, particularly those located at or near sensitive receptors. Rule 1470 currently includes specific provisions for those engines located at or near a school. Similar to the provision for schools, Proposed Amended Rule 1470 will require that engines located at or near a sensitive receptor (with the exception of schools which has its specific provisions) to meet Tier 4 PM emission limit in the state Off-Road Compression Ignition Engine Standards which would require after-treatment. All other engines will be required the health risk levels of Rule 1401 (1 in a million without t-BACT and 10 in a million with t-BACT), with a particulate emission rate limit of 0.15 g/bhp-hr.

Diesel Particulate

Emissions from diesel-fueled internal combustion engines are composed of a complex mixture of air pollutants that exist in gaseous and solid phases. Diesel engine emissions typically contain a variety of potential cancer-causing substances such as arsenic, benzene, formaldehyde, nickel, and polycyclic aromatic hydrocarbons (PAHs). Because of their small size, diesel PM particles, along with adsorbed compounds (many of which are known or suspected mutagens and carcinogens), are readily respirable and can effectively reach the lowest airways of the lung.

Diesel engines are principal sources of fine particle pollution, which can particularly affect sensitive populations, including children, the elderly, and people with existing medical conditions such as emphysema, asthma, and chronic heart and lung disease. In addition to their cancer health impacts, diesel PM emissions are also linked to non-cancer health effects, including pulmonary inflammation, irritation of the eyes and upper respiratory system, headaches, and nausea.

PUBLIC PROCESS

PAR 1470 is being developed through a public process. A working group was formed to provide an opportunity to discuss the proposed amended rule in greater detail and provide input to the AQMD staff throughout the rule development process. The working group is comprised of a variety of stakeholders including private business representatives, consultants for the regulated industry, engine manufacturers, and public agency representatives. As of this writing, the Working Group has met two times during this rule development process, on May 12, 2011 and June 9, 2011.

In addition, a Public Workshop has been scheduled on July 14, 2011 to present the proposed amended rule and receive public comment. Written responses to all public comments received throughout the rule development will be addressed in the draft staff report and changes, if any, will be made to the proposed amended rule where appropriate. The AQMD staff encourages the public to comment on the proposed amended rule.

REGULATORY HISTORY

Stationary diesel-fueled engines are regulated at the federal, state, and local levels. In 1998, CARB identified diesel particulate matter from internal combustion engines as a toxic air contaminant (TAC), and subsequently promulgated the Stationary Compression Ignition Engine ATCM (Title 17, California Code of Regulations section 93115). Diesel particulate matter is not classified by EPA as a hazardous air pollutant, although many of the components of diesel PM are classified as such.

Federal Requirements for Stationary Diesel-Fueled Engines

On February 26, 2004, the U.S. EPA issued final requirements in a National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (NESHAP). On March 9, 2011, the EPA issued amendments that provided national emission standards for hazardous air pollutants for existing stationary spark ignition reciprocating internal

combustion engines. The Reciprocating Internal Combustion Engines NESHAP targets toxic emissions (formaldehyde, acrolein, methanol, and acetaldehyde) for stationary compression ignition and spark ignition internal combustion engines located at major sources and area sources of hazardous air pollutants. CARB intends to work with the U.S. EPA to seek equivalency between the RICE NESHAP and the finalized CARB ATCM through the provisions of Section 112(L) of the federal Clean Air Act, as implemented through Subpart E.

Federal New Source Performance Standards

On July 11, 2006, the U.S. EPA promulgated the federal New Source Performance Standards (NSPS) emission standards for stationary diesel engines which regulates criteria pollutants. The NSPS standards are modeled after the U.S. EPA Nonroad Standards for nonroad and marine diesel engines. The U.S. EPA NSPS emission standards are phased in over several years with increasing levels of stringency (tiered standards), culminating in the most stringent Tier 4 engine standards. The NSPS standards require stationary prime (non-emergency) diesel engines to meet the most stringent Tier 4 emission standards for all pollutants (i.e., NMHC+NO_x, CO, and PM), which requires the use of after-treatment devices for NO_x and PM, such as Selective Catalytic Reduction (SCR) and Diesel Particulate Filters (DPF), respectively. Depending on the engine size, the NSPS requires new stationary emergency standby diesel engines to meet either the Tier 2, Tier 3, or Tier 4i nonroad diesel engine emission standards, which do not require the use of after-treatment devices. New stationary emergency standby direct-drive fire pumps are required to meet the same nonroad diesel engine emission standards as other emergency standby engines, however, manufacturers are allowed a two to three year delay (depending on the engine size) in implementation of the Tier 2, Tier 3, or Tier 4i standards for these engines. The direct-drive fire pump engine standards were allowed a delayed implementation of the nonroad diesel engine standards in order to allow for the extra time needed for manufacturers to develop and certify these engines to meet National Fire Protection Association (NFPA) requirements specific to this type of engine. Third party certification companies such as Underwriters Laboratories (UL) and FM Global certify fire pump components to a variety of testing standards, including NFPA 20 requirements.

California Requirements for Stationary Diesel-Fueled Engines

H&SC Section 39658 requires CARB to establish ATCMs for substances identified as toxic air contaminants. In 1998, CARB identified diesel particulate matter from internal combustion engines as a TAC. In September 2000, CARB approved the diesel PM control needs assessment, “Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles” (Diesel Risk Reduction Plan). In the Diesel Risk Reduction Plan, CARB recommended control measures to reduce diesel PM emissions and the associated cancer risk by 85 percent in 2020. In addition, in 2001, the Office of Environmental Health Hazard Assessment (OEHHA), pursuant to the requirements of Senate Bill 25 (Stats. 1999, ch. 731), identified diesel PM from internal combustion engines as one of the TACs that may cause children or infants to be more susceptible to illness. Senate Bill 25 also requires CARB to adopt control measures, as appropriate, to reduce the public’s exposure to these special TACs (California H&SC Section 39669.5).

The CARB Stationary Compression Ignition Engine ATCM (title 17, California Code of Regulations section 93115) was developed in support of the Diesel Risk Reduction Plan's goal of protecting the health of Californians by reducing public exposure to diesel PM. CARB originally approved the stationary diesel engine ATCM in 2004. The goal of this regulation is to reduce diesel PM and criteria pollutant (NO_x, NMHC, and CO) emissions from stationary diesel engines through stringent emission limits and operational requirements. The ATCM establishes emission standards and operating requirements for new and in-use stationary diesel engines.

The ATCM emission limits for particulate matter (PM), carbon monoxide (CO), oxides of nitrogen (NO_x), and non-methane hydrocarbons (NMHC) are linked to the state's Off-Road Compression Ignition Engine Standards (Off-Road Standards; title 13, CCR, section 2423). The Off-Road Standards establish emissions standards and implementation schedules for off-road diesel engines, based on an engine's model year and size (i.e., horsepower rating). The off-road engine certification standards are phased in as "Tiers" 1 through 4, with the emission standards becoming more stringent as each tiered standard takes effect in four to five year increments. The Tier 4 standards represent the final, most stringent emissions limits in the Off-Road Standards, and require the application of after-treatment devices for PM and NO_x, such as diesel particulate filters and selective catalytic reduction systems to achieve compliance, respectively. The Off-Road Standards are substantially equivalent to the aforementioned federal Nonroad Standards, except for requirements for stationary emergency standby engines (including direct-drive fire pump engines).

2007 ATCM Amendments

The primary purpose of the 2007 ATCM amendment was to establish emission standards for in-use stationary diesel agricultural engines, in order to reduce diesel PM emissions, exposure, and health risk. Most of the in-use agricultural engines affected by the ATCM amendments are those used to pump water for the irrigation of crops. The amendments identify performance standards which can be met by a variety of compliance options, including electrification, replacement with new engines, emission control retrofits, alternative technologies, and alternative fuels. Other 2007 ATCM amendments included: revisions to fuel reporting and recordkeeping requirements for emergency standby engines; amendments to the definitions; addition of a sell-through provision and alternative compliance demonstration option; addition of an exemption for stationary engines used at research and development or educational facilities; and updates to references.

2011 ATCM Amendments

Key amendments in the 2011 ATCM apply to new emergency standby engines and new emergency standby direct-drive fire pumps. In addition, this amendment eliminated the former ATCM requirement for new emergency standby engines to meet the after-treatment based Tier 4 standards for all pollutants, including the Tier 4 PM and NO_x standards. In the 2011 ATCM, emissions standards for new stationary emergency standby direct-drive fire pumps were amended to align with the NSPS standards specific to fire pump engines, which do not require the use of exhaust after-treatment devices. The NSPS standards for fire pumps and non-fire pump emergency standby engines are very similar, with the primary difference being that the implementation of the fire pump standards is delayed by two to three years, depending on the engine horsepower rating. This delay in implementation was included in the rule to account for

the additional time required to develop and certify these engines to National Fire Protection Association (NFPA) requirements. The NSPS standards for certain engine sizes for specific model years are higher than emission standards referenced in the state Off-Road Compression Ignition Engine Standards under Title 13 CCR Section 2423. This amendment eliminated the former ATCM requirement which would have mandated that new fire pump engines comply with the after-treatment based Tier 4 emission standards for all pollutants.

Emissions standards for new stationary prime diesel engines were also amended to simplify the regulatory language in the ATCM and align with the NSPS final rule deadlines for installing prime engines from a previous model year. This amendment revised PM emissions limits for engines in the 50 to 75 bhp range and those greater than 750 bhp and allows two years to sell and install engines from the previous tiered standard after transitioning to a new tiered standard. Other amendments included: deletion of the sell-through provision; revisions to the exemptions and definitions; amendments to reporting requirements; and other minor amendments, clarifications, and updates to references.

SCAQMD Requirements for Stationary Diesel-Fueled Engines

California Health and Safety Code (H&SC) Section 39666(d) requires that local air districts must implement and enforce or propose regulations to enact an ATCM no more than 120 days after the CARB adopts or implements it, otherwise it will automatically take effect. H&SC Section 39666(d) also requires that districts may enforce equally effective or more stringent rules than ATCMs adopted by the CARB. Rule 1470 was developed to implement the ATCM. Rule 1470 is as or more stringent than the ATCM.

Rule 1470

Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines was adopted by the Governing Board on April 2, 2004. The primary objective of Rule 1470 is to reduce emissions of diesel particulate matter (diesel PM) from stationary diesel-fueled internal combustion engines and reduces the associated health risk from exposure to diesel PM. The rule implements the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (Stationary Diesel Engine ATCM or ATCM) that was adopted by the California Air Resources Board (CARB), becoming effective in California in December 2004. Rule 1470 was amended three times: March 4, 2005, November 3, 2006 and June 1, 2007.

Since Rule 1470 was adopted before the promulgation of the ATCM, Amendments to Rule 1470 in March 2005 were needed due to subsequent changes to the ATCM. 2005 Amendments to Rule 1470 were to ensure consistency with the ATCM. Proposed changes resulting from the finalized ATCM include the addition of effective dates for rule requirements, definition modifications, and the addition of clarifying language.

Amendments to Rule 1470 in November 2006 reflect amendments to the state ATCM that became effective in September 2005. November amendments to Rule 1470 allowed up to 30 hours of operation of diesel emergency standby engines at health facilities, for purposes of maintenance and testing, consistent with the ATCM. New and modified definitions, date

clarifications, grammatical corrections, and other corrections (e.g., numbering) were aks incorporated.

Rule 1470 was amended in June 2007 to allow use of new Tier II engines for direct-drive fire pumps to allow manufacturers additional time to complete safety certifications for Tier III engines. Other amendments to Rule 1470 improved the clarity of Rule 1470 and consistency with the AQMD's Best Available Control Technology requirements for new engines enrolled in demand response programs.

Rule 1401

Rule 1401 – New Source Review of Toxic Air Contaminants establishes cancer and non-cancer risk requirements for new, relocated, or modified sources emitting toxic air contaminants listed in the rule. Diesel PM was added to the Rule 1401 list of TACs in 2008. Prior to the addition of diesel PM to the Rule 1401 list of TACs, the toxic impact from new and existing sources of diesel exhaust were evaluated using a speciated list of TACs found in diesel PM. Prime diesel engines are subject to Rule 1401 requirements, however, emergency standby engines are currently exempt. The rule requires that new, modified, and relocated equipment meet a risk threshold of less than or equal to one-in-one million without T-BACT and less than or equal to ten-in-one million with T-BACT.

Rule 1110.2

Rule 1110.2 – Emissions from Gaseous and Liquid-Fueled Internal Combustion Engines controls NO_x, carbon monoxide, and VOC emissions from stationary and portable internal combustion engines over 50 horsepower. Rule 1110.2 requires all stationary prime and portable engines over 50 bhp to either 1) Reduce NO_x emissions by 90% to one of two compliance limits specified in the rule, or; 2) permanently remove the engines from service or replace with electric motors. Emission standards in Rule 1110.2 require most stationary prime diesel engines to meet a NO_x emission limit of 11 parts per million, which would require the use of SCR. Based on the economic and technological considerations of applying SCR to stationary diesel engines, most facilities have chosen to utilize other fuels or power sources in lieu of diesel engines.

Rule 222

Rule 222 – Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II was adopted on September 11, 1998 to help simplify and streamline the permitting process by reducing the number of permit applications required by AQMD. The rule identifies specific types of equipment that have negligible emissions and minimal toxic health risks. Operators of such equipment are required to file information with AQMD which includes a description of the equipment, facility information, and other pertinent data for estimating emissions and determining compliance. Compliance is achieved for such equipment by meeting existing rule and recordkeeping requirements. Rule 222 was amended in December 2008 to provide a registration program for diesel-fueled agricultural engines as required by the state ATCM.

AFFECTED INDUSTRIES

Based on an evaluation of District permits, there are approximately 10,000 permitted diesel-fueled internal combustion engines owned or operated by approximately 6,000 facilities throughout the District. Approximately 5,900 of the facilities own or operate permitted stationary diesel engines. Stationary, diesel-fueled internal combustion engines used in stationary applications are typically categorized as either prime engines or emergency standby engines. Prime engines are used as part of normal operations in a variety of applications such as cranes, rock crushing, and agricultural irrigation. Emergency standby engines are typically used for emergency back-up power generation during emergencies such as power failures or rolling blackouts, or for pumping water in fire protection systems and are used at a wide array of facilities in a variety of industries, including manufacturing, refineries, power generation, medical facilities, hotels, banks, building management, correctional facilities, airports, retail shopping centers, military installations, schools, and many other publicly owned facilities and private businesses. Prime engines are also owned and operated by a wide variety of facilities and businesses, including ports, waste and recycling facilities, military installations, electrical generating companies, and public agencies.

Requirements for agricultural facilities with diesel engines will be removed and Rule 1470 will reference the ATCM for provisions affecting those engines. Agricultural operations are defined in the ATCM as growing and harvesting of crops or raising fowl or other animals primarily for making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution. Most agricultural engines are used for irrigation of crops and to power wind machines for protection of crops during cold weather.

Diesel Emergency Standby Engines in the Basin

The key proposed amendments to Rule 1470 apply only to new emergency standby engines, therefore, staff evaluated the District's permitting data from the most recent 10 year period (2001-2010) to determine the quantity of new engines permitted each year. Permitting data indicated that an average of 474 new emergency standby diesel engine permit applications were received per year for the 10 year period evaluated, most of which are emergency generators. Permitting data indicated that an average of 36 new stationary emergency standby direct-drive fire pump engine permit applications were received per year for the 10 year period. For emissions estimating purposes, the quantities of new permit applications per year were rounded up to 500 new emergency standby engines and 40 new direct-drive fire pump engines per year to provide a conservative estimate of how many new emergency standby engines would be installed per year in the future.

DIESEL ENGINE EMISSION CONTROL STRATEGIES

Existing emission standards in Rule 1470 require stationary diesel engines to comply with the state Off-Road engine standards for diesel PM (current rule limits require 0.15 g/bhp-hr PM or the Off-Road Standards, whichever is more stringent), NO_x, NMHC, and CO, with more

stringent diesel PM emission requirements for stationary diesel engines located at or near schools. Beginning in 2011, the Off-Road engine standards require certain engine sizes to comply with Tier 4 emission limits. Proposed Amended Rule 1470 will retain requirements for Tier 4 particulate emission limits, which will require diesel engine exhaust after-treatment devices, such as a Diesel Particulate Filter.

Diesel Particulate Filters (DPF)

Diesel particulate filters are one of the leading technologies available for achieving the most stringent diesel PM emission standards. Typically, DPFs consist of a porous substrate (e.g., wire mesh, sintered metal substrates, etc.) or a wall-flow type filter (e.g., ceramic, silicon carbide, etc.) situated in the exhaust stream of a diesel engine. As exhaust gases pass through the system, particulate emissions (i.e., diesel soot, comprised mostly of carbon) are collected and stored within the filter substrate. Since a filter's holding capacity is limited, the filter system must have the ability to remove accumulated particulate matter before the filter element becomes plugged, leading to DPF failure and/or engine damage. There are two types of DPF systems, passive and active, named for the method in which they clean or regenerate the filter element.

The "passive" method of filter cleaning, or regeneration, involves burning off, or oxidizing accumulated particulate matter on the filter by utilizing engine exhaust temperatures in combination with a catalyst. One technique uses a catalyst applied as a coating on the filter substrate, which helps to lower the ignition temperatures required for oxidation of the accumulated particulate matter. During engine operation, particulate matter is collected on the filter substrate, and as the engine exhaust temperature increases, the accumulated material is oxidized by the exhaust gas. Another catalyst based technique uses an upstream oxidation catalyst with either a bare or catalytically coated filter. This technique utilizes the oxidation catalyst to facilitate oxidation of nitric oxide (NO) to nitrogen dioxide (NO₂). The NO₂ oxidizes the collected particulate in the filter and substantially reduces the temperature required to regenerate the filter. PM reductions of 85 percent or greater may be achieved with these types of DPFs.

Due to the passive DPFs reliance on exhaust temperature for the oxidation of particulate, it is critical that the engine exhaust temperature profile is carefully evaluated under actual operating conditions, to ensure the exhaust temperatures are sufficient for filter regeneration. Engine exhaust temperatures are highly application dependent and can be affected by factors such as excess heat loss in the exhaust system (e.g., insufficient insulation of exhaust components), or over-sized engines that are operated low on their torque/power curve (i.e., operating under low engine loads). Some emergency standby engines use a load bank to increase the exhaust temperature for filter regeneration.

Other DPF systems perform filter regeneration by utilizing supplemental heat sources to combust trapped particulate matter by increasing exhaust gas temperatures or by directly heating the filter element. These "active" regeneration systems are not dependent on exhaust temperatures for filter regeneration, however, they may require more sophisticated hardware, electronic controls, and monitoring systems to modulate exhaust gas flow, control filter regeneration, and monitor exhaust backpressure and exhaust temperature.

For all DPFs, the manufacturer will indicate the duration that the engine can operate between regeneration events. For emergency standby engines, this is often identified in terms of the number of cold starts and 30 minute idle sessions that the engine can perform before the DPF requires regeneration. Since typical operation of emergency standby engines includes periodic maintenance and testing operations with low or no engine load, it is critical that the engine owner/operator verify that filter regeneration is occurring within manufacturer specified guidelines.

During testing and maintenance or during regeneration, some emergency standby generator engines use a load bank to simulate an electrical load, thereby increasing the load on the engine and increasing the exhaust temperature for filter regeneration. Load banks operate on the principle of electrical resistance and create a load on an electrical generator by removing and converting energy from the generator into heat, which is then dissipated from the load bank (usually by air). Typically, emergency electrical generator engines operating at low loads (i.e., without an electrical load on the generator) may not generate sufficient engine exhaust temperatures to sustain filter regeneration during routine maintenance and testing operations. In lieu of load bank use, emergency generator engine operators may place an electrical load on the generator by utilizing the generator for its designed purpose (e.g., switch to building electrical load). However, in some cases this may not be feasible due to the short loss of power between the time a primary power source is shut down to the time the emergency generator starts and begins generating electricity to support the power loss.

DPF performance is also affected by the rate of PM generated by the engine. Because DPFs must be able to capture and store a certain quantity of soot, engines emitting PM at a rate greater than 0.2 g/bhp-hr will typically overload the filter's holding capacity and cause significant performance problems. This should not inhibit the application of DPFs on stationary diesel emergency standby engines in California, and particularly in the SCAQMD, since current regulations require all new stationary diesel emergency standby engines to emit PM at a rate of 0.15 g/bhp-hr or less. Another consideration to ensure optimal DPF performance is the use of low sulfur diesel fuels. Sulfur in diesel fuel can adversely affect the performance of catalyst-based diesel particulate filters. Sulfur can inhibit the performance of catalytic materials on or upstream of the filter, thereby compromising the filter's filtration capabilities. In California, fuel sulfur content is not expected to compromise DPF performance, since CARB currently requires the use of ultra-low sulfur diesel fuel that has a sulfur content of no more than 15 parts per million by weight.

Facilities in the Basin using DPFs on Emergency Standby Engines

In order to address issues and concerns regarding the application and use of DPFs on emergency standby diesel-fueled engines, the AQMD staff contacted facilities to better understand any issues experienced by users of DPFs for emergency standby engines. The AQMD Staff contacted 139 facilities representing 158 DPF installations identified through the AQMD permitting database. Engines with DPFs ranged in size from 56 to 3,622 BHP and were found in use at a variety of facilities including schools, hospitals, cell towers, city and county buildings, energy production facilities, and commercial facilities. Staff primarily inquired whether facilities had experienced any issues with the operation and maintenance of their DPF, and how the filter was being operated, maintained, and regenerated. Of the 118 facilities that responded, 112 facilities

stated that they had not experienced any issues with the maintenance and operation of their DPF. In addition to outreach conducted, the AQMD staff also solicited the PAR 1470 Working Group and stakeholders to submit information on any known facilities with accounts of DPF issues.

A total of 7 facilities were identified by AQMD staff contacts to individual facilities and input from the working group as having DPF issues. 6 of these facilities had problems with engines being unable to reach sufficient temperatures needed to regenerate the DPF. 5 of the 6 facilities resolved this problem by using a load bank on the engine to reach adequate loads and temperatures, while 1 facility replaced their passive DPF with an active DPF. 1 of the 7 facilities identified as having DPF issues reported continuous clogging of the filter. After further research of this reported issue, it was discovered that the DPF had been installed as a retrofit on a pre-Tier 1 engine that was noncertified by CARB and also not included in the list of certified engine families that the DPF was CARB-verified for. Additionally, the operator of the DPF was not conducting the required filter maintenance as required by manufacturer's specifications.

Diesel Particulate Filter Costs

The cost of diesel filter ranges depending on the engine size. The AQMD staff contacted six DPF manufacturers regarding the cost and installation of diesel particulate filters. The data requested for was for six engine sizes ranging from 50 BHP to 2600 BHP as shown in Table 1-1 below. In general, the installation cost ranged from 1,000 to 18,000 depending on the engine size and DPF size, DPF manufacturer, and dealer/installer.

**Table 1-1
DPF and Installation Costs**

Engine Rating	DPF Cost (Including installation)		
	Low	High	Average Total
50 bhp	\$6,950.00	\$9,126.00	\$7,741.00
150 bhp	\$7,600.00	\$22,850.00	\$14,205.00
500 bhp	\$15,200.00	\$81,750.00	\$39,115.00
1000 bhp	\$37,000.00	\$107,750.00	\$63,312.00
2000 bhp	\$65,750.00	\$134,213.00	\$103,617.00
2600 bhp	\$82,750.00	\$180,550.00	\$136,588.00

Other Control Strategies

Another potential diesel emission reduction strategy for stationary emergency standby engines is bi-fuel systems. Bi-fuel systems are aftermarket add-on systems which can allow a diesel engine to utilize a mixture of diesel fuel and up to 70% natural gas, allowing operators the ability to operate their diesel engines for longer periods and to help reduce diesel particulate emissions. Since the engine can be converted to utilize two fuels simultaneously, the primary fuel requirement can be met using pipeline-supplied natural gas. However, a small percentage of diesel fuel must be utilized by the engine during all phases of operation in order to maintain the necessary quantity of diesel fuel to act as an ignition source for the air-to-natural gas mixture during the engine's compression stroke. The flow of natural gas to the engine is dependent on the load and varies with combustion airflow changes. In the event natural gas service is interrupted, the generator can revert to full diesel-fueled operation. Bi-fuel systems are currently not a Verified Diesel Emission Control under

CARB's verification program, however, may be an option to reduce diesel particulate and associated health risk.

A Diesel Oxidation Catalyst (DOC) is a flow-through catalyst, typically made of precious metals, that oxidizes pollutants in the exhaust stream. DOCs are capable of reducing particulate matter emissions by approximately 10 to 30 percent. These are typically not a good option for diesel emergency engines because they require a high temperature for the catalyst to properly function. The short time most emergency engines are operated for testing and maintenance does not allow a sufficient temperature for DOCs to operate efficiently.

CARB VERIFICATION FOR DIESEL POLLUTION CONTROL STRATEGIES

In order to ensure that a particular emission control technology achieves a certain level of PM emission reductions, CARB created a technology verification program. The *Regulation for the Verification Procedure for In-Use Strategies to Control Emissions from Diesel Engines* was adopted by CARB on May 16, 2002 with subsequent amendments in 2004, 2006, 2008, and 2010. The verification procedure provides a way to thoroughly evaluate the PM emission reduction capabilities and durability of diesel emission control strategies (DECs) as part of a retrofit program. The CARB verification procedure ensures that emission reductions achieved by a control strategy are both real and durable and that production units in the field are achieving emission reductions consistent with their verification. These goals are achieved through requirements for DECs to undergo emissions and durability testing, demonstrate successful applications in the field, include detailed maintenance information, and include warranties for the end-user.

Emissions and Durability Testing

Emissions testing of DECs are required to be performed on an emission control group under specific engine testing conditions including parameters for test cycles and runs. For stationary emergency standby engines, a minimum durability demonstration period of 500 hours is required to show the extended service accumulation period of the DECs after installation. Exhaust temperature, engine backpressure, and engine speed are also required to be measured and recorded during the entire durability testing period. DECs must ultimately demonstrate compatibility in the field with at least one piece of equipment belonging to the initial emission control group for which it seeks verification.

Maintenance and Warranty Requirements

Manufacturers must provide detailed maintenance information for verified DECs (VDECs) to the end-user upon delivery, including recommended intervals for cleaning and/or replacing components. Manufacturers must also provide the end-user warranty coverage that applies to the full repair or replacement cost of any failed VDECs and affected engine components, including parts and labor, so long as the DPF was operated and maintained as required. A minimum product warranty period of 5 years or 4,200 hours, whichever comes first, is given for stationary standby emergency engines at or above 50 brake horsepower.

CARB currently has 10 Level 3 VDECs for stationary emergency standby diesel engine applications (Table 1-1). These VDECs apply to hundreds of engine families representing thousands of engine models ranging from 50 brake horsepower to 4,000 brake horsepower. Level 3 VDECs are verified to reduce diesel PM by 85 percent or greater and comply with the CARB January 2009 NO₂ limit (CCR, Title 13, Section 2702 (f) and section 2706 (a)). The CARB list of verified retrofit technologies for stationary diesel engines can be found at: <http://www.arb.ca.gov/diesel/verdev/vt/stationary.htm>.

Table 1-1

CARB Verified Diesel Emission Controls (VDECs) for Stationary Emergency Standby Generator Engines
6/15/2011

Manufacturer	DPF Model	PM Verification Level	Active or Passive Regeneration?	Engine Type	Filter Regeneration Requirements			Number of Hours of Operation Before Filter Cleaning Req'd	Fuel	Notes
					Number of Cold Starts and Idle Sessions Before Regen. Req'd	Min. Exhaust Temp. and Time for Filter Regeneration	Max. Consecutive Minutes Operating Below Passive Regen. Temp.			
Catalytic Exhaust Products	Dieselytic SX5-5C	Level 3 Plus: $\geq 85\%$ PM reduction	Passive	See footnote 1	10 (30 min. idle sessions)	400°C (750°F) for at least 30 minutes	300 minutes	2,000 when using diesel fuel with <15 ppm sulfur.	See Footnote 4	
Clean Air Systems	PERMIT	Level 3 Plus: $\geq 85\%$ PM reduction	Passive	See footnote 1	Regeneration recommended after 12 consecutive sessions (10 min. idle sessions); required after 24	300°C (572°F) for 30% of operating time or 2 hours, whichever is longer.	240 Minutes	5000 hours under normal operating conditions	See Footnote 4	
DCL International	Mine-X Sootfilter	Level 3 Plus: $\geq 85\%$ PM reduction	Passive	See footnote 2	16 (15 min. idle sessions)	350°C (662°F) for a minimum of 30% of operating time	240 minutes	1,000 when using Ultra Low Sulfur Diesel (<15 ppm Sulfur)	See Footnote 4	
GTE Industries	Purity	Level 3 Plus: $\geq 85\%$ PM reduction	Passive	See footnote 1	10 (30 min. idle sessions)	400°C (750°F) for a minimum of 30 minutes.	300 Minutes	2,000 when using diesel with <15 ppm sulfur	See Footnote 4	
Johnson Matthey	CRT+	Level 3 Plus: $\geq 85\%$ PM reduction	Passive	See footnote 1	24 (30 min. idle sessions)	240°C (465°F) for a minimum of 40% of operating time.	720 minutes	6 to 12 months, depending on hours of operation, maintenance practice, and oil used	See Footnote 4	NOx/PM ratio of at least 8 with a preference for 20 or higher.
Mintech	combikat CBS Particulate Trap	Level 3 Plus: $\geq 85\%$ PM reduction	Passive	See footnote 1	24 (30 min. idle sessions)	See Figure 1 in the CARB verification letter.	720 Minutes	Application Specific. Per calculations provided in the verification letter under 'Filter Sizing'. 2000 Hours Typical.	See Footnote 4	
Nett Technologies	GreenTRAP	Level 3 Plus: $\geq 85\%$ PM reduction	Passive	See footnote 1	10 (30 min. idle sessions)	400°C (750°F) for a minimum of 30 minutes.	300 Minutes	2,000 when using diesel with <15 ppm sulfur.	See Footnote 4	
Rypco	HDPF/C	Level 3 Plus: $\geq 85\%$ PM reduction	Active	See footnote 1	NA. Active DPF.	Not Applicable (NA). Active DPF.	NA. Active DPF.	Inspect every 1,000 hours and clean if needed. Active DPF.	See Footnote 4	
Sud-Chemie	EnvCat DPF	Level 3 Plus: $\geq 85\%$ PM reduction	Passive	See footnote 1	10 (30 min. idle sessions)	400°C (750°F) for a minimum of 30 minutes.	300 Minutes	2,000 when using diesel with <15 ppm sulfur.	See Footnote 4	
Universal Emissions Technologies	Green Shield DPF	Level 3 Plus: $\geq 85\%$ PM reduction	Passive	See footnote 1	10 (30 min. idle sessions)	400°C (750°F) for a minimum of 30 minutes.	300 Minutes	2,000 when using diesel with <15 ppm sulfur.	See Footnote 4	
Rypco	ADPF	Level 2 Plus: $\geq 50\%$ PM reduction	Active	See footnote 3	NA. Active System	NA. Active System	NA. Active System	NA. Active system with a flow through mesh filter. Should not require cleaning.	See Footnote 4	
1 - Diesel, with or without turbocharger, without Exhaust-Gas Recirculation (EGR), mechanically or electronically controlled, certified off-road engines meeting 0.2 g/bhp-hr diesel PM or less based on certification or in-use emission testing. 2 - Diesel, with or without turbocharger, without Exhaust-Gas Recirculation (EGR), mechanically or electronically controlled, Tier 1, Tier 2, or Tier 3 off-road engines certified to a PM emission limit of less than or equal to 0.15 g/bhp-hr 3 - Diesel, with or without turbocharger, certified off-road engines meeting 0.4 g/bhp-hr or less based on certification or in-use emissions testing 4 - California diesel fuel with less than or equal to 15 ppm sulfur or a biodiesel blend provided that the biodiesel portion of the blend complies with ASTM D6751, the diesel portion of the blend complies with Title 13 (CCR), sections 2281 and 2282 and the blend contains no more than 20 percent biodiesel by volume.										

CHAPTER 2: SUMMARY OF PROPOSED AMENDED RULE 1470

OVERVIEW

PROPOSED CHANGES TO RULE 1470

OVERVIEW

Proposed Amended Rule 1470 primarily affects new emergency standby diesel engines and direct drive fire pumps. Proposed Amended Rule 1470 would revise the limits for NO_x and HC emissions for new emergency diesel standby engines to eliminate the current requirement to meet Tier 4 off-road emission standards that would require installation of after-treatment controls for NO_x and HC. Proposed amendments would delay PM emission rates for emergency standby engines to January 1, 2012 and narrow the applicability of the current PM standards to those engines that are located at or within 100 meters of a sensitive receptor (with the exception of schools which has its own provisions). For those engines located beyond 100 meters of sensitive receptor, owners/operators would be required to at least meet a PM emission limit 0.15 g/bph-hr and demonstrate compliance with the risk levels in Rule 1401(d)(1)(A) or (d)(1)(B). The AQMD staff proposes to revise emission limits for diesel-fueled direct-drive fire pump engines to align with current AQMD BACT limits and the most current state standards for these engines that does not require after-treatment controls for NO_x or PM.

Proposed Amended Rule 1470 would also delete all Rule 1470 requirements for agricultural engines and stationary diesel-fueled compression ignition engines less than or equal to 50 bhp and replace them with direct references to the applicable ATCM sections. Other proposed amendments to Rule 1470 include an alternative compliance demonstration option; an exemption for diesel engines used at research and development and educational facilities with written approval from the District; and other administrative changes.

PROPOSED CHANGES TO RULE 1470

Proposed amendments to Rule 1470 are listed below in the order they occur in the proposed rule. In addition, where applicable, a brief discussion of proposed amendments to Rule 1470 has been included in order to provide the AQMD staff's rationale for the proposed amendments.

Definitions

Alternative Diesel Fuel – A change is proposed for the definition to clarify that all biodiesel blends are considered alternative diesel fuels for the purposes of PR1470. This proposed change is consistent with the amended ATCM.

CARB Diesel Fuel – The definition is proposed to be updated for consistency with the amended ATCM. The definition is now in agreement with the diesel fuel specifications of Title 13 CCR, Sections 2281 and 2282.

Certified CI Engine – The addition of this definition is proposed to define a certified CI engine as an engine that is certified to meet the Tier 1, Tier 2, Tier 3, or Tier 4 Off-Road CI Certification Standards as specified in title 13, CCR, section 2423. The addition is proposed for clarification and consistency with the amended ATCM.

Date of Initial Installation – The addition of this definition is proposed to clarify the installation date of a stationary diesel-fueled engine for compliance purposes. This is consistent with the amended ATCM.

Emergency Standby Engine – Wording will be added to clarify that an emergency standby engine is not operated to supply power to an electric grid or does not supply power as part of a financial arrangement with any entity, except as allowed in sections (c)(2), (c)(3), (c)(7), and (c)(8). Sections (c)(2) and (c)(3) specify requirements that an owner or operator must meet to operate an emergency standby engine in response to notification of an impending rotating outage. Sections (c)(7) and (c)(8) specify operating requirements and emission standards for new and in-use DRP engines. This update to the definition is consistent with the amended ATCM.

Emergency Use – Wording will be added to clarify that emergency use is defined as providing electrical power or mechanical work during any of the listed events and subject to specific conditions. This is consistent with the amended ATCM.

End User – Wording will be added to clarify that a person who purchases a diesel engine for the sole purpose of resale is not considered an end user. This is consistency with the amended ATCM.

Maintenance and Testing – The proposed amendment would add a provision which allows, upon approval from the Executive Officer, additional hours for testing of emergency standby engines that have been repaired after a breakdown or failure during maintenance. This provision was added to the ATCM so that districts could, at their discretion, allow these additional hours not to be counted against the limited annual operating hours for testing and maintenance. Hours for testing and maintenance of some emergency standby diesel engines are limited to 20 hours per year, depending on their diesel PM emission rate. Additionally, a change to the definition is proposed to add “uninterruptible power supply” as an example of supported equipment” in the definition. This revision clarifies that the operation of an emergency standby engine to test an uninterruptible power supply is considered to be a maintenance and testing operation. These revisions are consistent with the amended ATCM.

New or New CI Engine – This definition was revised to delete references to agricultural engines, since all other agricultural engine requirements are proposed to be deleted and replaced with references to the applicable sections of the Stationary Diesel Engine ATCM. There are very few agricultural engines in operation within the SCAQMD and Rule 1110.2 emission limits for prime engines essentially prohibits the use of prime diesel-fueled engines in the SCAQMD.

Sensitive Receptor – The definition is new. Sensitive receptors includes any residence including private homes, condominiums, apartments, and living quarters, schools as defined in paragraph (b)(57) of Rule 1470, preschools, daycare centers, and health care facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.

Verified Diesel Emission Control Strategy – A change to the definition is proposed to clarify that the verification procedure referred to is the CARB Verification Procedure.

Requirements

Changes to the fuel requirements in Paragraph (c)(1) are proposed to allow biodiesel, biodiesel blends not meeting the definition of CARB diesel fuel, Fischer-Tropsch fuels, and emulsions of water in diesel fuel to be used in engines without meeting CARB's verification procedures for fuels. This is consistent with an amendment to the ATCM based on additional testing of these fuels and recognizes that the alternative fuels can provide substantial reductions in diesel PM relative to CARB diesel fuel. It should be noted that use of some of these fuels may result in slight increases in some pollutants, such as oxides of nitrogen (NOx) and hydrocarbons (HC). However, the AQMD, as the permitting authority for stationary diesel fueled engines, maintains the authority to allow, limit, or prohibit the use of these fuels.

Operating Hours and Diesel PM Emission Requirements

For new emergency standby engines (excluding direct-drive fire pump engines), operating hours would be consolidated in Clause (c)(2)(C)(i) because new emergency diesel standby engines that meet PM emission standards that are 0.15 g/bhp-hr or less are allowed to operate up to 50 hours per year for non-emergency operation. Since SCAQMD Best Available Control (BACT) Requirements for emergency standby compression-ignition generators limits them to 50 hours per year for testing and maintenance, provisions that allowed up to 100 hours per year for non-emergency operations are no longer applicable and have been deleted.

New Emergency Standby Engines and Direct Drive Fire Pumps Installed between January 1, 2011 and January 1, 2010

Clause (c)(2)(C)(ii) has been added to allow new emergency standby engines other than direct drive fire pumps that were installed on or after January 1, 2011 and prior to January 1, 2012 to emit diesel PM at a rate of less than or equal to 0.15 g/bhp-hr unless they are located at or near a school. This provision relieves engines that are installed during this time period from PM requirements that would have required after-treatment.

New Emergency Standby Engines Installed After January 1, 2012

Clause (c)(2)(C)(iii) maintains PM emission requirements in current Rule 1470 for new emergency standby diesel engines that are installed on or after January 1, 2012 and narrows the applicability of this requirement to those engines that are located at or within 100 meters of a sensitive receptor, with the exception of schools which has its own requirements. These engines are required to be a certified engine that emits PM at a rate of less than or equal to 0.15 g/bhp-hr or the most current PM emission requirements of the Off-Road Compression Ignition Engine Standards for their horsepower rating, whichever is more stringent.

Clause (c)(2)(C)(iv) maintains the current Rule 1470 PM emission requirements for new emergency standby engines other than direct drive fire pumps that are located on or within 100 meters of school grounds. Under Rule 1470, these engines must meet a PM emission rate of 0.01 g/bhp-hr.

Clause (c)(2)(C)(v) has been added to require new emergency standby engines other than fire pumps, installed after January 1, 2012, located beyond 100 meters from a sensitive receptor to be a certified compression ignition engine that emits diesel PM at a rate less than or equal to 0.15 g/bhp-hr and demonstrate compliance with the risk requirements specified in Rule 1401 (d)(1)(A) or (d)(1)(B). Under this provision, the engine would not be allowed to exceed a cancer risk thresholds of one-in-one million without T-BACT and ten-in-one million with T-BACT. Facilities can meet Rule 1401 risk levels either by reducing the particulate emission rate or reducing their testing and maintenance hours of operation.

Provisions for Use of Diesel Particulate Filter

Clause (c)(2)(C)(vi) has been added to require that when a diesel particulate filter is used to comply with PM standards or risk requirements that it is CARB verified for use with the engine model and is operated in accordance with the CARB Verification. Furthermore, it must meet the performance standards and be installed according to the procedures pursuant to the CARB Verification Procedure for Stationary Pollution Control Equipment.

NMHC, NO_x and CO Emission Standards for New Emergency Standby Engines

Clause (c)(2)(C)(vii) contains the NMHC + NO_x and CO emission standards for new stationary emergency standby engines other than direct drive fire pumps. On or after January 1, 2011 these engines will be required to meet the emission standards in Table 1 of the Proposed Amended Rule. These requirements are essentially the most current NMHC + NO_x and CO emission standards in the Off-Road standards that would not require exhaust aftertreatment controls for NO_x. These emission standards are consistent with SCAQMD BACT requirements for new emergency standby compression ignition engines excluding fire pumps.

Direct Drive Fire Pumps

Proposed Amended Rule 1470 adds new subparagraph (c)(2)(D) which contains the emission limits for new stationary emergency standby direct-drive fire pump engines. These standards are consistent with SCAQMD BACT guidelines for compression ignition fire pumps and would not require after-treatment emission controls for these engines. The amended standards are found in Table 2 of the Proposed Amended Rule.

The AQMD staff evaluated direct drive fire pumps that have been permitted between 2008 and 2010. PM emission rates from these engines can achieve the PM emission limits in Proposed Amended Rule 1470. These emission rates are different than the amended ATCM, however, based on direct drive fire pumps that have been permitted since 2008, emission rates in Proposed Amended Rule 1470 can be achieved.

Emission Standards for Prime Engines

Proposed Amended Rule 1470 will change HC, NO_x, NMHC+NO_x, and CO emission standards for new and in-use prime diesel-fueled engines to provide consistency with SCAQMD Rule 1110.2 – Emissions from Gaseous and Liquid-Fueled Engines. Existing Rule 1470 language requires new and in-use prime diesel engines to meet Tier 4 Final PM limits (0.01 g/bhp-hr), however, allows engines to meet the HC, NO_x, NMHC+NO_x, and CO Off-Road Standards for “off-road engines of the same model year and maximum rated power.” Proposed amendments

would delete references to the Off-Road Standards for HC, NO_x, NMHC+NO_x, and CO, and replace them with a reference to the “applicable emission standards specified in SCAQMD Rule 1110.2.” Rule 1110.2 emission requirements for HC, NO_x, NMHC+NO_x, and CO for prime diesel engines are more stringent than the Off-Road Standards and essentially preclude the operation of diesel-fueled prime engines in the SCAQMD after July 1, 2011, with a few exceptions.

Agricultural Engines

Paragraph (c)(6), which currently contains emission standards for new agricultural engines is proposed for revision and replacement with a reference to the section of the ATCM applicable to new and in-use agricultural engines. The heading of paragraph (c)(6) is proposed for revision to “Emission Standards for Stationary Diesel-Fueled CI Engines Used in Agricultural Operations,” which would include new and in-use agricultural engines. Subparagraph (c)(6)(A) is proposed to include text referencing sections 93115.3, 93115.4, and 93115.8 of the ATCM, which specify exemptions, definitions, and emission limits for all pollutants for new and in-use stationary diesel engines used in agricultural operations. Rule 1110.2 essentially precludes the use of diesel-fueled prime engines in the SCAQMD and based on outreach for Rule 1110.2 implementation, there are no prime diesel agricultural engines operating in the AQMD at this time.

Engines ≤ 50 BHP

Paragraph (c)(10) contains emissions requirements for stationary diesel engines less than or equal to 50 bhp, and prohibits, except as provided in the exemptions section of the rule, the sale, lease, or use in the District of any stationary diesel-engine less than or equal to 50 bhp, unless it meets the current Off-Road Standards. Proposed amendments to this paragraph would remove all requirements for stationary diesel engines less than or equal to 50 bhp, and replace them with a reference to the applicable section (93115.9 – Emission Standards for New Stationary Diesel-Fueled Engines, Less than or Equal to 50 Brake Horsepower) of the ATCM. Amendments to this section are proposed for consistency with the revised ATCM.

Recordkeeping, Reporting, and Monitoring Requirements

Paragraph (d)(2) which currently contains reporting requirements for new emergency or prime engines sold to agricultural operations is proposed for deletion to be replaced by the reference to the Stationary Diesel Engine ATCM in paragraph (c)(6). Subsequent paragraphs are renumbered and references changed for consistency with the new numbering.

Paragraph (d)(3) contains reporting requirements for sellers and dealers of stationary diesel-fueled engines rated at less than or equal to 50 bhp. Existing rule provisions require sellers and dealers of less than or equal to 50 hp stationary engines to annually report to CARB the number of engines sold. 2011 ATCM amendments deleted reporting requirements for stationary diesel engines less than or equal to 50 bhp, because the data is no longer needed to support CARB’s emission inventory program. Because Proposed Amended Rule 1470 refers to the ATCM requirements for diesel-fueled engines rated at less than or equal to 50 bhp and for consistency with the amended ATCM, staff proposes to delete this section of the rule.

Paragraph (d)(9) which was renumbered as (d)(7), contains the reporting requirements for standby engines. The proposed amendment is consistent with the amended ATCM and recognizes that fueling of emergency engines differs from fueling of prime engines. The proposed amendment allows owners/operators of emergency standby engines to maintain fuel purchase records demonstrating only that the fuel purchased and supplied to the engine or engines is compliant fuel. A monthly summary of the fuel purchased and supplied to the engines must be available upon request of AQMD staff. The records may be kept at an off-site central location. This change is proposed because refueling practices for emergency standby engines are based on need as opposed to refueling practices for prime engines which are typically refueled on a regular schedule. Refueling for emergency standby engines often occurs from a centralized location with small quantities of fuel delivered to each engine via small vehicles.

Paragraph (d)(10), renumbered as (d)(8), contains reporting requirements for stationary diesel engines used to fulfill the requirements of an Interruptible Service Contract (ISC). Existing rule language requires owners/ operators of ISC engines to update the information required by paragraph (d)(10)(A) only upon request from the District. Staff is proposing to require the owners or operators of DRP engines to provide a complete and updated inventory annually to the District and the ARB. If the Executive Officer determines an updated inventory is not needed for any given year, the affected parties will be notified in writing that a submittal is not necessary for that year or subsequent years.

Proposed amendments will modify language in paragraph (f)(1) to clarify that listed sources of data may be used to “demonstrate compliance with the emissions standards or requirements” of paragraphs (c)(2) through (c)(10). The proposed amendment would replace the text “meet the emission data requirements.”

Proposed Amended Rule 1470 adds a new paragraph (f)(6). This allows owners/operators of new and in-use stationary engine used for prime (non-emergency) applications options for showing compliance with the 0.01 g/bhp-hr PM standard without having to perform source tests. This amendment is consistent with amendments to the ATCM.

Exemptions

The AQMD staff proposes amendments to delete paragraphs (h)(3) and (h)(4) which previously exempted in-use agricultural engines from the requirements of Rule 1470 and exempted new agricultural engines from certain portions of Rule 1470. These exemptions would no longer be needed due to the proposed amendments which reference the Stationary Diesel Engine ATCM requirements for agricultural engines. Subsequent paragraphs are renumbered and references corrected for consistency with the new numbering.

Staff proposes to delete paragraph (h)(17), which contains provisions for requests for delay in implementation of fuel requirements. This provision allowed, prior to January 1, 2006, owners/operators to request a delay in implementation from the fuel requirement provisions in paragraph (c)(1). The compliance date for this provision is now past and this section is no longer applicable.

New paragraph (h)(15) is proposed to add an exemption from emission standards for diesel engines used at research and development and educational facilities. The purpose and nature of these operations at these facilities requires that the engines may, at times, emit at rates that exceed the performance standards of the ATCM. The exemption would apply to diesel engines used exclusively for three purposes: 1) as engine test cells and test stands used for testing burners or compression ignition engines or engine components; 2) for operation or performance testing of fuels, fuel additives, or emission control devices at research and development facilities; and 3) for maintenance, repair, and rebuild training at educational institutions.

Additional ATCM Amendments

Several amendments were made to the ATCM in 2007 and 2011 that have not been included in the proposed amendments to Rule 1470 because they pertain only to other air districts or because they have already been incorporated. The first is a clarification of the “emergency use” definition as it applies to pre-launch system check and flight tracking for command destruct site. In addition, amendments to the ATCM revised the nomenclature of Command Destruct sites to Command Transmitter (CT) sites, due to a change in the mission of these sites. Since these amendments were added for Vandenberg Air Force Base in Santa Barbara County APCD and the AQMD has no such sites, these clarifications have not been included in Rule 1470. Amendments to the ATCM in 2007 added a sell-through provision for stock engines. However, the sell-through provision was deleted from the ATCM in 2011, because there are many currently available engines capable of meeting current PM emission standards (i.e., 0.15 g/bhp-hr PM) specified in the ATCM and because the 2011 ATCM amendment removed the requirement for new engines to meet Tier 4 emission limits. Emission limits for new prime engines were revised in the ATCM to align the PM limits with the Off-Road Standards limit (0.02 g/bhp-hr) for engines in the 50-75 bhp range and those greater than 750 bhp. Rule 1470 will maintain the existing requirement for new prime engines to comply with a 0.01 g/bhp-hr PM emission limit, regardless of the engine horsepower. Another ATCM amendment is a provision that applied only to the rolling blackout reduction program (RBRP) in San Diego APCD which is not included.

CHAPTER 3: IMPACT ASSESSMENT

INTRODUCTION

IMPACTS OF PROPOSED AMENDMENTS TO RULE 1470

SOCIOECONOMIC ASSESSMENT

POTENTIAL ENVIRONMENTAL IMPACTS

**DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY
CODE SECTION 40727**

INTRODUCTION

Proposed Amended Rule 1470 will have forgone NO_x and PM reductions from elimination of Tier 4 NO_x emission standards and delayed implementation and narrowing of the applicability of Tier 4 PM emission standards as discussed in more detail below. This section will also discuss other impact analyses that will be conducted during the rulemaking process.

IMPACTS OF PROPOSED AMENDMENTS TO RULE 1470

Beginning January 2011, forgone emission reductions will occur from eliminating requirements for new emergency standby engines to meet future Tier 4 emission limits for NO_x, NMHC, and CO. It is also anticipated that proposed amendments to emission limits for direct-drive fire pump engines will result in additional minor foregone emission reductions for PM and NMHC+NO_x. Emission limits for CO do not change when the Off-Road Standards transition from Tier 2/3 to Tier 4, therefore the proposed amendments will result in no impacts to CO emissions. In addition, Proposed amendments to emission standards for these engines are anticipated to result in reductions in NMHC emissions of .0013 tons per day of NMHC.

Estimated foregone emission reductions resulting from proposed amendments to Rule 1470 were calculated by comparing the proposed emission standards with the existing emission limits. Existing emission standards are based on the state Off-Road engine standards and begin to require new emergency standby engines equal to or greater than 175 bhp to comply with Tier 4 after-treatment based emission limits for all pollutants starting in 2011. As indicated previously, the most stringent Tier 4 PM and NO_x emission standards will ultimately require the application of DPF and SCR, respectively, to mitigate diesel engine emissions, whereas the most stringent emission standards proposed for Rule 1470 will only require the use of a DPF (depending on the engine size) and in certain situations.

Affected Engines

Based on permitting data from the past ten years the AQMD received an average of approximately 470 permit applications per year for new stationary diesel emergency standby generator engines and an average of approximately 36 permit applications per year for new direct-drive fire pump engines, for the period 2001-2010. For emission calculation purposes, 500 new emergency generator applications per year and 40 new direct-drive fire pump applications per year were assumed for a conservative estimate of incoming permit applications.

Since the Rule 1470 and ATCM emission standards for new emergency generators are applicable to various engine horsepower ranges and the emission standards are phased in over differing time periods, it was necessary to assess the horsepower ratings of the engines comprising the new permit applicant population. Staff utilized a random sampling methodology to extract engine data from more than 300 emergency standby engine applications and permits from the past five years. This analysis resulted in the following estimated breakdown of engine sizes for the annual population of new emergency standby engine applicants:

Table 3-1
Estimated New Emergency Standby Generator Applications per Year

<u>Engine Power Range</u>	50-74 BHP	75-99 BHP	100-174 BHP	175-299 BHP	300-599 BHP	600-749 BHP	750-1199 BHP	1200+ BHP	<u>Total</u>
% of Total	4.5%	8.0%	12.0%	14.0%	25.5%	2.5%	13.0%	20.5%	100.0%
No. of Engines	23	40	60	70	128	13	65	103	500

Table 3-2
Estimated New Emergency Standby Direct-Drive Fire Pump Applications per Year

<u>Engine Power Range</u>	50-74 BHP	75-99 BHP	100-174 BHP	175-299 BHP	300-599 BHP	600-749 BHP	750-1199 BHP	1200+ BHP	<u>Total</u>
% of Total	0.0%	1.9%	5.7%	28.6%	51.4%	12.4%	0.0%	0.0%	100.0%
No. of Engines	0	1	2	11	21	5	0	0	40

Operating Hours Under Rule 1470 and Proposed Amended Rule 1470

50 operating hours were assumed for existing Rule 1470 and Proposed Amended Rule 1470 to estimate emissions forgone. Currently, Rule 1470 operating limits and SCAQMD BACT operating limits allows 50 operating hours for an engine that meets 0.15 g/bhp-hr PM. Although the current version of Rule 1470 would allow up to 100 operating hours for an engine that meets 0.01 g/bhp-hr of PM, the SCAQMD BACT requirements limit operation of these diesel emergency standby engines to 50 hours. Thus amendments to Rule 1470 will limit operating hours for all new emergency standby engines to 50 operating hours.

For emission estimation purposes, a maximum of 50 operating hours was used. For those engines anticipated to install DPFs to comply with proposed amendments, it was assumed that 10 out of the 50 hours of operation would be utilized for DPF regeneration. Based on an assumed emergency generator operating schedule of weekly testing at 15 minutes per test, the lowest number of cold starts and idle sessions allowable prior to required regeneration (according to filter regeneration requirements in CARB Verification documents) would be 16 cold starts. CARB Verification information indicates that the longest required time to regenerate a filter would be 2 hours per regeneration event. Based on this information, the maximum number of regeneration events required would be 3 per year at 2 hours per event (50 weeks per year, divided by 16 cold starts before regeneration required, results in 3 regenerations required per year; 3 regenerations at 2 hours each, results in a maximum of 6 hours of regeneration operation per year). For emissions estimation purposes, 10 hours of regeneration was assumed in order to obtain a conservative estimate of emissions resulting from regeneration. Although 50 operating hours was assumed for calculating emission forgone, engine survey data submitted by SCAQMD stationary emergency standby engine owners/operators, indicates that most stationary emergency standby engines are operated on average 20 hours per year. The average operating hours from engine survey information was increased to 26 hours to establish a minimum quantity of operating hours for maintenance and testing, based on an assumed operating schedule consisting of weekly testing at 30 minutes per maintenance and testing session.

Forgone PM Emission Reductions

Forgone PM emissions are expected from delaying compliance with future Tier 4 requirements from January 1, 2011 to January 2012 for engines greater than 175 BHP and also narrowing the applicability for those engines that will be required to meet PM limits for future Tier 4 requirements. As of January 1, 2011, until December 31, 2011, the proposed PM standards for new emergency standby engines will be 0.15 g/bhp-hr. This will result in foregone emission reductions relative to the existing Rule 1470 emission standards, which would have required the majority of engine sizes, including direct-drive fire pump engines (equal to or greater than 175 bhp) to meet Tier 4 PM limits beginning in 2011. As shown in Table 3-3, the PM emissions forgone in 2011 from delaying the compliance date for Tier 4 PM emission limits one year is 0.001572 tons per day.

Beginning January 1, 2012, the proposed PM standards require new emergency standby engines located at or 100 meters or less from a non-school sensitive receptor to comply with PM emission rates comparable to the existing Tier 4 requirements (0.01 g/bhp-hr PM for most engine sizes and 0.075 g/bhp-hr for engines 750 bhp and greater). Engines that are located more than 100 meters from a sensitive receptor and can demonstrate compliance with the Rule 1401 risk requirements, will be required to meet a PM emission rate of 0.15 g/bhp-hr.

Through analysis of 2010 AQMD permitting data and use of aerial images, it was estimated that approximately 50% of new stationary diesel-fueled emergency standby engines may be located at or 100 meters or less from a sensitive receptor. Based on these findings, emissions calculations assumed 250 out of 500 new emergency standby engine applicants would be subject to proposed Rule 1470 emission limits requiring compliance with Tier 4 PM emission limits beginning in 2012. Based on the analysis, it was assumed that the remaining 250 new emergency standby engine applicants would be located more than 100 meters from a school or non-school sensitive receptor will meet the Rule 1401 risk requirements and will only be required to meet the PM emission limit of 0.15 g/bhp-hr.

For emission reductions forgone beginning 2012, existing Rule 1470 emission limits (which are based on the Off-Road emission standards) were compared to 0.15 g/bhp-hr for the remaining 250 engines that are assumed to meet the Rule 1401 risk requirement. Since the current Rule 1470 relies on the Off-Road emission standards which has a staggered implementation approached based on the engine size, the foregone PM emissions increase as Off-Road emission standards become more stringent. In 2012, PM emissions forgone are represented for the portion of the 250 engines that are estimated to be above 75 BHP and in 2013 PM emissions forgone are represented for the portion of the 250 engines that are above 50 BHP. Beginning in 2015 the Off-Road emission standards become more stringent for engines above 750 BHP so additional foregone PM emission reductions are expected accordingly.

Table 3-3
PM Emission Reductions Forgone

Year	Total PM Emissions (tons per year)	Total PM Emissions (tons per day)
2011	0.726	0.0029
2012	0.444	0.00178
2013	0.446	0.0018
2014	0.446	0.0018
2015	0.573	0.0023

Note: Emissions estimates based on 500 new emergency standby engine applications per year. 250 out of 500 estimated to be subject to Rule 1470 PM requirements for facilities at or 100 meters or less from a sensitive receptor. 250 facilities estimated to be subject to PM emission limit of 0.15 g/bhp-hr. Estimates include assumptions for 40 new direct-drive fire pump engines per year. Operating hours assume a maximum 50 total hours of maintenance and testing hours, including 10 hours of engine operation for DPF regeneration.

Forgone NOx Emission Reductions

Beginning January 2011, forgone emission reductions will occur from eliminating requirements for new emergency standby engines to meet future Tier 4 emission limits for NOx, NMHC, and CO. Foregone NOx emission reductions will occur because the proposed emission limits for new emergency standby engines (including direct-drive fire pumps) will not require the application of SCR systems to mitigate NOx, due to technical and operational limitations. Forgone emission reductions are based on 500 new stationary emergency standby engines per year and an engine horsepower distribution as described above. For the 2011 calendar year, existing Rule 1470 emission limits were compared to emission limits comparable to the amended ATCM limits (i.e., Tier 2, 3, or 4 Interim NMHC+NOx and CO limits, depending on the engine size).

As shown in Table 3-4, it is estimated that there will be approximately 0.0509 tons per day of NOx forgone in 2011. Since the current Rule 1470 relies on the Off-Road emission standards which has a staggered implementation approached based on the engine size, the foregone NOx emissions increase as Off-Road emission standards become more stringent. In 2011, NOx emission reductions forgone are represented for the portion of the 500 engines that are estimated to be above 175 BHP and in 2012 NOx emission reductions forgone are represented for the portion of the 250 engines that are above 75 BHP. Beginning in 2014 the Off-Road emission standards become more stringent for engines between 175 and 750 BHP and after 2015 all engines above 75 BHP must comply with the most stringent Tier 4 NOx limits, so PM emission reductions forgone are expected accordingly.

Table 3-4
NOx Emission Reductions Forgone

<u>Year</u>	<u>Total NOx Emissions (tons per year)</u>	<u>Total NOx Emissions (tons per day)</u>
2011	20.036	0.080
2012	22.011	0.089
2013	22.011	0.088
2014	25.235	0.101
2015	28.250	0.113

Note: Emissions estimates based on 500 new emergency standby engine applications per year. 250 out of 500 estimated to be subject to Rule 1470 PM requirements for facilities at or 100 meters or less from a sensitive receptor. 250 facilities estimated to be subject to PM emission limit of 0.15 g/bhp-hr. Estimates include assumptions for 40 new direct-drive fire pump engines per year. Operating hours assume a maximum 50 total hours of maintenance and testing hours, including engine operation for DPF regeneration.

SOCIOECONOMIC ANALYSIS

Staff is preparing the socioeconomic assessment of the proposed amendments to Rule 1470 and the assessment will be included in the Set Hearing Package.

POTENTIAL ENVIRONMENTAL IMPACTS

Pursuant to the California Environmental Quality Act (CEQA) and AQMD Rule 110, a Subsequent Environmental Assessment (SEA) will be prepared to analyze any potential adverse environmental impacts associated with the proposed amendments to Rule 1470.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings

California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report.

Necessity

A need exists to adopt Proposed Amended Rule 1470 to address amendments to the Airborne Toxic Control Measure for Stationary Compression Ignition Engines effective October 18, 2007 and May 19, 2011 respectively to ensure that Rule 1470 is at least as stringent as the ATCM.

Authority

The AQMD Governing Board has authority to adopt Proposed Amended Rule 1470 pursuant to the California Health and Safety Code Sections 39002, 39650 et. seq., 40000, 40001, 40440, 40441, 40702, 40725 through 40728, 41508, 41700, and 44390 through 44394.

Clarity

Proposed Amended Rule 1470 are written or displayed so that their meaning can be easily understood by the persons directly affected by the rules.

Consistency

Proposed Amended Rule 1470 are in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non-Duplication

Proposed Amended Rule 1470 will not impose the same requirements as any existing state or federal regulations (except that they implement ATCM provisions). The proposed amended rule and proposed rule are necessary and proper to execute the powers and duties granted to, and imposed upon, AQMD. Removal of requirements of agricultural engines and referencing the ATCM will ensure these provisions are not duplicated.

Reference

By adopting Proposed Amended Rule 1470, the AQMD Governing Board will be implementing, interpreting or making specific the provisions of the California Health and Safety Code Sections 41700 (nuisance), 44390 et seq. (Risk Reduction Audits and Plans), and Federal Clean Air Act Section 112 (Hazardous Air Pollutants).

Rule Adoption Relative to Cost-effectiveness

Proposed Amended Rule 1470 is not a control measure in the 2007 Air Quality Management Plan (AQMP) and, thus, was not ranked by cost-effectiveness relative to other AQMP control measures in the 2007 AQMP. Cost-effectiveness in terms of dollars per ton of pollutant reduced is not applicable to rules regulating toxic air contaminants.

Incremental Cost-effectiveness

Health and Safety Code Section 40920.6 requires an incremental cost effectiveness analysis for Best Available Retrofit Control Technology (BARCT) rules or emission reduction strategies when there is more than one control option which would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, SO_x, NO_x, and their precursors. Since the proposed amended rule applies to toxic air contaminants, the incremental cost effectiveness analysis requirement does not apply.

AQMP and Legal Mandates

Proposed Amended Rule 1470 is not a measure in the Air Quality Management Plan (AQMP). Proposed Amended Rule 1470 is an air toxic rule that would implement the requirements of the CARB ATCM for stationary compression ignition engines.

REFERENCES

REFERENCES

California Air Resources Board, 2006. Staff Report: Initial Statement of Reasons for Proposed Requirements for Stationary Diesel In-Use Agricultural Engines.

California Air Resources Board, 2006. Final Statement of Reasons for Rulemaking, Including Summary of Comments and Agency Response, Public Hearing to Consider the Proposed Amendments to the Stationary Diesel Engine Measure.

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California Air Resources Board, 2010. Regulatory Advisory: Amendments to Requirements for Stationary Compression-Ignition (Diesel) Engines.

California Code of Regulations, Title 13- Motor Vehicles, Division 3- Air Resources Board, Chapter 9- Off-Road Vehicles and Engines Pollution Control Devices, Article 4- Off-Road Compression-Ignition Engines and Equipment, § 2423- Exhaust Emission Standards and Test Procedures - Off-Road Compression-Ignition Engines

Code of Federal Regulations, Title 40- Protection of Environment, Part 60- Standards of Performance for New Stationary Sources, Subpart IIII- Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

SCAQMD, 2005. Risk Assessment Procedures for Rules 1401 and 212, Version 7.0
<http://www.aqmd.gov/prdas/Risk%20Assessment/RiskAssessment.html#CurrentRiskAssessment>